

**THE GRAVENHORST, SCHIØDTE AND FOERSTER TYPES  
BELONGING TO THE GENUS MEGASTYLUS SCHIØDTE, 1838,  
WITH KEYS TO THE SPECIES (HYMENOPTERA,  
ICHNEUMONIDAE, MICROLEPTINAE)**

by

G. VAN ROSSEM

*Plant Protection Service, Wageningen*

**ABSTRACT**

The lectotypes of *Plectiscus flavopictus* Gravenhorst, 1829, *Megastylus cruentator* Schiødte, 1838, *Megastylus mediator* Schiøde, 1838, *M. pumilio* Foerster, 1871, *Myriarthrus cingulator* Foerster, 1871, and *Dicolus pectoralis* Foerster, 1871, are designated. The male of *Megastylus cruentator* Schiødte is described for the first time. Two subgenera of *Megastylus* are recognized: *Megastylus* and *Dicolus* Foerster, 1868. Some new combinations and synonymy are proposed. The paper is illustrated with figures and 4 photographs.

**TAXONOMY AND NOMENCLATURE**

Foerster's (1868) establishment of *Myriarthrus* was incorrect as for no obvious reason he rejected the name *Helictes* Haliday, 1837. As the type species of *Myriarthrus*, Foerster (1871) took *Ichneumon erythrostoma* Gmelin, sensu Gravenhorst, 1829, the males of which have concavities on certain flagellar segments. Thus Foerster misunderstood Gravenhorst's description and consequently *Myriarthrus* became an unnatural assembly of species. Viereck therefore proposed *Myriarthridea* with *Myriarthrus cingulator* Foerster as the type species. The generic names *Dicolus* Foerster, 1868, and *Myriarthridea* Viereck, 1914, were both placed in the synonymy of *Megastylus* by Townes (1971).

There is sufficient reason to recognize *Dicolus* Foerster as a useful taxon, namely as a subgenus of *Megastylus*. The two subgenera of *Megastylus* are separated in the keys following below. The deep propodeal fossa and the very slender postanellus seem to be well defined characters of *Dicolus*.

I have not searched the Foerster collection for concealed *Megastylus* material in the modern sense. The Foerster (1868 and 1871) "Plectiscoid" genera were actually first revised by Perkins (1962) and later rearranged by Townes (1971).

**SEPARATION OF THE SEXES**

It is difficult to determine the sex of many specimens at first glance. For this reason Schiødte and later authors never recognized the proper male of *M. cruentator*. What Schiødte thought to be males of *M. cruentator* turned out to be females. I found this by making microscopic preparations of genitalia of the syntypes (Pl. 1 Fig. 2). As a consequence the male of *M. cruentator* was never described. One purpose of this paper is to rectify this strange confusion.

The sexes in *Megastylus* are easily separated by the shape of the antennal bristles. Males have very short, close and vertical setae (Fig. 1); the female antenna is characterized by the much longer and scarcer pilosity (Fig. 2).

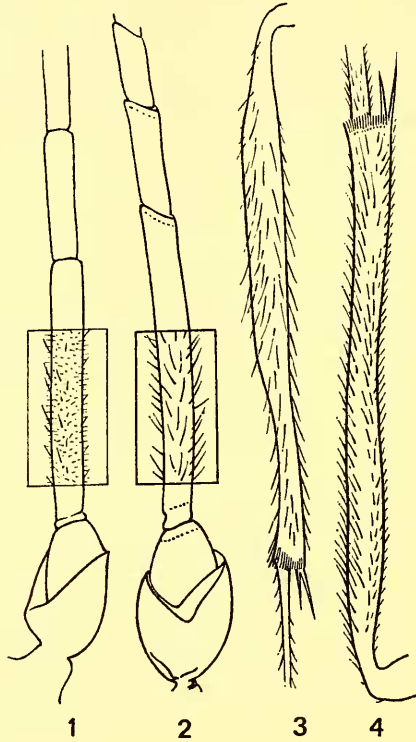


Fig. 1—4. Antennae and legs of *Megastylus*. 1, *M. cruentator*, ♂, Planken-Wambuis near Ede, 15.V.1966 (coll. van R); 2, the same, ♀, N Spessart, Lochmühle, 17-22.X.1971, trap (coll. van R); 3, *M. pectoralis*, ♀, left hind tibia (inner side), Lousberg (Aachen), 15.X., coll. Foerster (ZSM); 4, *M. impressor*, ♀, holotype, right hind tibia (inner side) (MC).

#### A NOTE ON THE FOERSTER TYPES

The Foerster *Megastylus*, *Myriarthrus* and *Dicolus* material is quite undisturbed, but it has a remarkable feature, namely, some kind of discoloration. Most specimens have a light brownish tone of the integument which is not the natural colour. The types of many species are surprisingly small specimens. Mounting and labelling are excellent.

#### TENTATIVE KEY TO FEMALES

1. Postanellus short, index 3.5—5.0. Subgenus *Megastylus* . . . . . 2
- Postanellus long and slender, index 6.0—10.0. Subgenus *Dicolus* . . . . . 5
2. Second gastral tergite striate. Hind coxae on the lower inner side granulated\*). In typical specimens frontal orbits always with broad white lining. Mesoscutum with

\*) Difficult to see.

- anterolateral yellowish marks, from these yellowish lines converge towards and coalesce on disk. Episternum 2 always completely black. Third gastral tergite in most cases yellowish to brownish . . . . . *flavopictus*
- Second gastral tergite with fine regular microsculpture, alutaceous, never striate . . . . . 3
3. Frontal orbit (above antennal sockets) with conspicuous white lining. Rather small specimens, 3.5—4.6 mm, difficult to separate from *M. pumilio* . . . . . *rufipleuris*
- Frontal orbit without white lining . . . . . 4
4. Middle femur stout, index 3.6—3.8. Small to minute specimens, 2.5—3.2 mm. Face, frons and thorax without any white or yellowish marks. Antennal base and legs, including coxae light brownish. Head, thorax and gaster almost uniformly dark reddish brown\*) to black, except for yellow marking of gastral segment 3. All femora stout, indices: 3.0—3.1 (1); 3.6—3.8 (2); 5.0 (3) . . . . . *pumilio*
- Middle femur slender, index 5.1—7.0. Specimens with strong variability in size (4.0—7.0 mm) and colour, the latter ranging from deep black: head (except clypeus), thorax (except legs) and gaster to specimens with most of notum 1, episternum 2, mesosternum and pleural parts of propodeum fulvous to deep brick-red. Palpi, mandibles and clypeus often white to dirty white. Anterior margin of notum 1 often marked white. Specimens with lighter gastral tergites 2 and 3 occur . . . . . *cruentator*
5. Hind tibia conspicuously inflated in the 0.7 proximal part, thus causing a constriction in the 0.3 distal part (Fig. 3) . . . . . 6
- Hind tibia weakly inflated in proximal part, thus not strongly constricted in the distal part (Fig. 4) . . . . . 7
6. Rather small specimens (3.3—4.4 mm). Frontal orbits dorso-laterad of antennal insertions without a broad yellow spot . . . . . *subtiliventris*
- More robust specimens (5.2—5.5 mm). Frontal orbits dorso-laterad of antennal insertions with broad yellow spot. Mesoscutum with vague yellow lines, coalescing on disk . . . . . *pectoralis*
7. Basitarsus of front leg about 0.56 of length front tibia, thus basitarsus (and also following tarsal segments) of front leg strikingly slender. Antennal cleaner large, causing conspicuous outcurving of basitarsal base (Fig. 5). Hind femur not inflated in proximal part . . . . . *excubitor*
- Basitarsus of front leg about 0.33—0.43 of length front tibia, not slender. Antennal cleaner not conspicuously outcurved (Fig. 6). Hind femur somewhat inflated in proximal part . . . . . *impressor*

## TENTATIVE KEY TO MALES

Males of *M. rufipleuris*, *M. subtiliventris* and *M. excubitor* are unknown

1. Hind tibia somewhat inflated in its proximal 0.67 part (Fig. 7) (subgenus *Dicolus*) . . . . . *M. pectoralis* and perhaps *M. subtiliventris*
- Hind tibia not inflated in its proximal part (Fig. 8) . . . . . 2
2. First and second gastral tergite striate. Specimens abundantly marked with yellow: palpi, mandibles, malar space, clypeus, face entirely, frontal orbits, pleuron 1, pronotum, mesoscutum with broad anterior lining and parallel lines coalescing on disk.

\*) Especially in museum specimens.

- Episternum 2 for the greater part black. Genitalia, Pl. 1 Fig. 3 . . . *M. flavopictus*
- First and second gastral tergite not striate . . . . . 3
3. The following characters combined: propodeum with a conspicuous transverse impression (fossa) in its 0.25—0.28 proximal part, thus clearly *away* from the apical boundary of notum 3 (postscutellum); postanellus relatively long and slender, index 8.8—12.5\*); hind femur long and slender, index 7.0—8.5\*). Hind tibia slimly clavate (Fig. 8) . . . . . *M. impressor*
- Propodeum with either a weak (in *M. pumilio*) or none evident impression; postanellus less slender, index < 8.8 (5.5—8.0); hind femur of normal shape, index 5.8—7.0. Hind tibia weakly to evidently clavate . . . . . 4
4. Minute specimens (about 2.7—3.2 mm long). Index postanellus 5.5—6.5. Thorax entirely brown or black. Hind tibia somewhat clavate towards apex. Legs including coxae yellow. Face brown (to yellow?). . . . . *M. pumilio*
- More robust specimens, 4.1—5.4 mm long, abundantly marked with yellow: palpi, mandibles, clypeus, malar space, face entirely, frontal orbits, pleuron 1, pronotum, episternum 2. Vertex and back of head black. Mesoscutum for the greater part black, with vague brownish lining on disk. Propodeum including sternal parts mostly black. Index postanellus 6.0—8.0. Hind tibia clearly clavate towards apex. Legs with all coxae yellow. Genitalia, Pl. 1 Fig. 4 . . . . . *M. cruentator*

### Subgenus *Megastylus* Schiødte, 1838

Type species: *M. cruentator* Schiødte, 1838.

Subgenus *Megastylus*: Thomson, 1888, Opusc. Ent. 12 : 1311.

### *Megastylus cruentator* Schiødte

♂ (! ♀) *Megastylus cruentator* Schiødte, 1838, Rev. Zool. Cuv. 1 : 139.

*Megastylus cruentator*: Schiødte, 1839, Mag. Zool. (2)1 : 4—5.

♀ *Megastylus mediator* Schiødte, 1838, Rev. Zool. Cuv. 1 : 139.

*Megastylus mediator*: Schiødte, 1838, Mag. Zool. (2)1 : 5.

♀ *Megastylus nigriventris* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 105. New synonymy.

♀ *Megastylus conformis* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 105. New synonymy.

♀ *Megastylus fuscicornis* Foerster, 1871, Verh. naturh. Rheinl. 28 : 105. New synonymy.

*Megastylus cruentator*: Townes, 1971, Mem. Amer. Ent. Inst. 17 : 205.

*Megastylus mediator* (= *cruentator*): Townes, 1971, Mem. Amer. Ent. Inst. 17 : 205.

Characteristics of the type specimens. — *M. cruentator*. Female. Front wing 4.9\*\*) Labels: a white printed museum label "Danmark ex coll. Schiødte"; lectotype label and ♀ added by me; distal part of gaster cut off and micro-slide for genitalia fixed on pin. *M. cruentator* det. van R.

*M. mediator*. Female. Front wing 4.4 mm. Labels: a white label (probably original) "♀ Kjöbenh. [the type locality] Schiødte"; a white museum label "Danmark ex coll. Schiødte"; lectotype label by me: *M. cruentator* det. van R.

*M. nigriventris* Foerster. Female. Front wing 5.7 mm. Labels: a white label (original) "45. gl.\*\*\*) Mont-joie"; a blue-rimmed box label "nigriventris Frst.". Holotype labelled by me: *M. cruentator* det. van R.

\*) Based on 3 specimens and probably not quite reliable.

\*\*) From base of costal margin.

\*\*\*) Meaning: "Glieder" = segments of antenna.



*M. conformis* Foerster. Female. Front wing 5.0 mm. Labels: a white label (original) "45 gl Aachen"; a blue rimmed box label "conformis Frst". Holotype labelled by me: *M. cruentator* det. van R.

*M. fuscicornis* Foerster. Female. Front wing 3.2 mm. Labels: a white label (original) "♀ + 39 gl. Aachen"; a blue rimmed box label "fuscicornis Frst.". Holotype labelled by me: *M. cruentator* det. van R.

Description of the male. — Body length 4.0—5.4 mm. Front wing 3.0—4.0 mm. Head with the following parts yellow: palpi, mandibles, lower gena, clypeus, entire face, lower part of frons and part of inner orbit. A sharply bounded rectangle below the central ocellus brownish to black. Vertex and back of head black. Eyes and ocelli large. Labial palpi short; maxillary palpi strikingly long and slender, reaching at least well beyond front coxa. Mandible short, somewhat swollen at base, strongly tapering towards apex; teeth lying in horizontal plane. Clypeus strongly convex with characteristic, erect, sparse hairs. Clypeal fovea deep, with an open anterior tentorial pit. Malar space wide, with a groove. Head preponderantly polished, here and there finely coriaceous. Antennae, slender, of body length.

Thorax characteristically coloured: entire pronotum, pleuron 1, all coxae, episternum 2 (mesopleurae) and mesosternum ivory yellow towards reddish brown. Mesoscutum entirely black, in some specimens with light brown streaks along the prescutal sutures which may coalesce on the disk and backwards towards the scutellar fovea. Scutellum often brownish. The entire propodeum including the sternal part mostly black. Sculpture of pronotal and mesopleural (episternum 2) parts almost polished. Mesoscutum strongly convex, very finely coriaceous, prescutal sutures (notauli) weak. Propodeum only with pleural carina, sometimes posterior transverse carina present; dorsally finely coriaceous with a vague tendency towards transverse striation. Prepectoral carina present, in most specimens not reaching suture between notum 1 and episternum 2. Entire thorax with widely placed suberect, light-coloured hairs, which become more dense on the sublateral and pleural parts of propodeum. Wings hyaline. Legs long and slender, yellowish, except fuscous apex of hind tibia. All femora slender; index hind femur 5.8—7.1.

Gaster with 1st and 2nd tergite alutaceous and fuscous; 3rd and 4th tergite very often yellow and finely alutaceous. Following segments mostly fuscous. Male genitalia as in Pl. 1 Fig. 4.

Female. — I refrain from giving a full description, as the female is sufficiently characterized by the details given in the key. Two differential characters are: the slender middle femur, index 5.1—7.0 and the absence of a white lining on the inner orbits of the eyes. Ovipositor, Pl. 1 Fig. 2.

Remark. — In spite of the fact that Schiødte (1838, 1839) mentioned that he had males, the type series of this species comprises females only. Nor is it clear from his description that Schiødte recognized the male. The same holds for his second species (*M. mediator*) as well as for Foerster's three species, *M. nigriventris*, *conformis* and *fuscicornis*, and for all females and all specimens of *M. cruentator*. This strange state of affairs was thus pursued by Foerster (1871) and later by Schmiedeknecht (1908-1911). I conclude that the male of this rather common species has never been properly described. When studying the related *M. flavopictus*, I noted the strong sexual dimorphism in this species and assumed that also in *M. cruentator* the male could hereby be recognised. A series of males in the available material, formerly perhaps taken for *M. flavopictus* males, represent the missing male of *M. cruentator*. It is described above.

Biology. — The collecting dates on the examined material give some evidence that two generations per year occur. The first from April to early June, the second from August to the middle of October.

Material examined. — Denmark: 10 ♀, lectotype and 9 syntypes of *M. cruentator*, Sieland (coll. Schiødte) (MC); ♀, lectotype of *M. mediator*, Kjöbenhavn and 7 other ♀, no locality (coll. Schiødte) (MC); ♂, as *M. lineator*!, Møn (coll. Schiødte) (MC). Germany: ♀, holotype of *M. conformis* Foerster, Aachen (coll. Foerster) (ZSM); ♀, holotype of *M. nigriventris* Foerster, Montjoie (?) (coll. Foerster) (ZSM); ♀, holotype of *M. fuscicornis* Foerster, Aachen (coll. Foerster) (ZSM); ♀, ND Spessart, Lochmühle, 17—22.X.\*)1971, trap (coll. van Rossem). Italy: ♀, Bolzano, 1914, leg. Smits van Burgst (ELW). Netherlands: ♂, Ede, Sijsselt, 25.VIII.1963, trap (coll. van Rossem); ♂, Ede, Sijsselt, 7.IX.1963, trap (coll. van Rossem); 3 ♂, Ede, Planken Wambuis, 15.V.1966 (coll. van Rossem); ♀, Ede (on window), 6.VII.1967 (coll. van Rossem); 2 ♀, Ede, Sijsselt, 14.VIII and 28.IX.1970, trap (CJZ); 4 ♀, Ede, Sijsselt, 12 & 22.V., 1 & 9.VI.1971, trap (CJZ); ♀, Radio Kootwijk (Gerritsfles), 27.IX.1964 (coll. van Rossem); ♂, Radio Kootwijk (Assel), 12.IX.1963 (coll. van Rossem); ♂, Kemperberg\*\*) 28.V.1967, trap (coll. van Rossem); ♀, Hilversum, 9.IX.1960, leg. den Hoed (KWR); ♂, Nuth (Limburg), 17.V.1968, leg. den Hoed (KWR); ♀, Vaals (Limburg), IV.1914, leg. Smits van Burgst (ELW). No locality; 2 ♀, leg. Schmiedeknecht (coll. Smits van Burgst) (ELW).

### *Megastylus flavopictus* (Gravenhorst) new combination

♂ *Plectiscus flavopictus* Gravenhorst, 1829, Ichn. Eur. 2(2) : 983.

♂ (!) *Megastylus lineator* Schiødte, 1838, Rev. Zool. Cuv. 1 : 139. New synonymy.

*Megastylus lineator*: Schiødte, 1839, Mag. Zool. (2)1 : 7.

*Megastylus lineator*: Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 104.

♂ ♀ *Myriarthrus cingulator* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 103. New synonymy.

*Myriarthrus flavopictus*: Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 103.

*Myriarthridea cingulator*: Townes, 1971, Mem. Amer. Ent. Inst. 17 : 205.

Characteristics of the type specimens. — *Plectiscus flavopictus*. Male. Front wing 3.6 mm, 2nd tergite striate. Labels: none. Lectotype label added by me: *M. flavopictus* det. van R. Probably the specimen from Genova ("sexus incerti").

*Megastylus lineator*. Male. Front wing 3.8 mm. Labels: a white, rimmed label (probably original) "♀ Strandm (Strandmöllén) Drewsen"; a printed museum label "Danmark ex coll. Schiødte". Holotype label and ♂ added by me: *M. flavopictus* det. van R. Schiødte indicated the sex of this specimen erroneously.

*Myriarthrus cingulator*. Male. Front wing 3.0. Labels: a white label "♂.32 gl. Aachen"; a blue rimmed box label "cingulator Frst.". Lectotype label added by me; 12 syntypes labelled paralectotype, *M. flavopictus* det. van R.

I refrain from giving full descriptions of both sexes because the differential characters of this species are recapitulated in the keys. Genitalia ♂ (Pl. 1 Fig. 3).

Material examined. — Austria: ♀, Carinthia, Ostkarawanken, Ebriach, 580—750 m, 21—29.VII.1964 (coll. van Rossem). Denmark: ♂, the holotype of *M. lineator*, Strand-

\*) All specimens from this locality were wrongly labelled: IX.

\*\*) Near Arnhem.

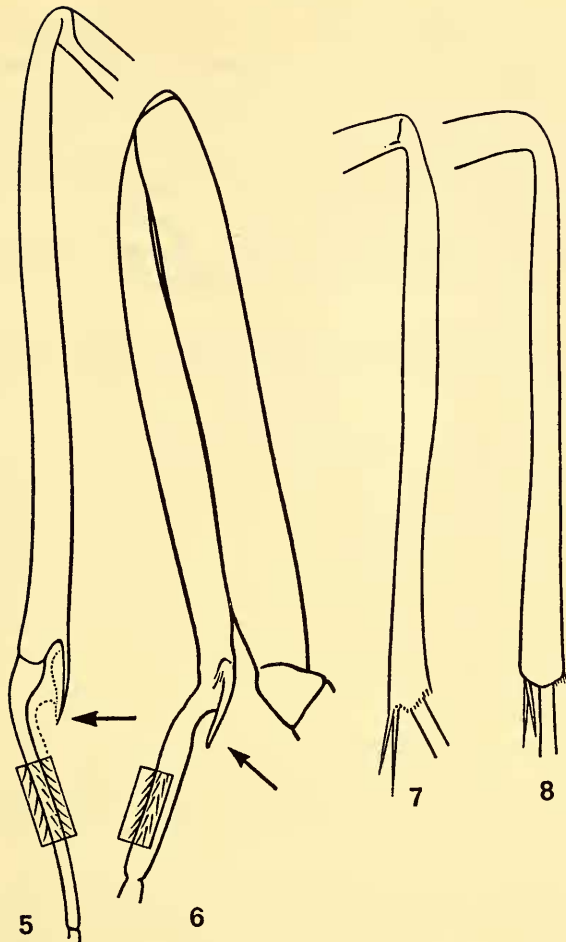


Fig. 5—8. Legs of *Megastylus*. 5, *M. excubitor*, right front leg, female, holotype (ZSM); 6, *M. impressor*, right front leg, female, Strandmøllen, coll. Schiødte (MC); 7, *M. pectoralis*, left hind tibia (outer side), male, Aachen, coll. Foerster (ZSM); 8, *M. impressor*, left hind tibia (outer side), male, Viborg, coll. Schiødte

møllen, leg. Drewsen (coll. Schiødte) (MC). Germany: ♂, lectotype of *Myriarthrus cingulator* and 12 syntypes, all Aachen, 2 specimens without label (coll. Foerster) (ZSM). Italy: ♂, lectotype of *Plectiscus flavopictus*, Genoa (?), coll. Gravenhorst (ZI). Netherlands: ♂, Hoge Veluwe, Kemperberg, 21.VII.1967 (coll. van Rossem); the following 4 ♂ & 7 ♀ all from Ede, Sijsselt, trap, 3 & 15.IX.1970; 17, 22 & 30.V.1971, 9 & 21.VI.1972 (CJZ); ♂ (genitalia, Pl. 1 Fig. 3), Ede, trap, 8—15.IX.1970 (coll. van Rossem). No locality, ♀, coll. Smits van Burgst (ELW).

### *Megastylus pumilio* Foerster

♂ ♀ *Megastylus pumilio* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 105.

♂ *Megastylus retroligatus* Foerster, 1871, Verh. naturh. Rheinl. 28 : 105. New synonymy.

♂ *Megastylus leptoderus* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 105. New synonymy.

♂ *Megastylus pauxillus* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 105. New synonymy.

Characteristics of the type specimens. — *Megastylus pumilio*. Male. Front wing 2.5 mm. Antenna 31 segments. Labels: a white label "♂ 31 gl. Aachen". Lectotype label added by me. There are two specimens on the pin; the left one is selected as the lectotype.

*Megastylus retroligatus*. Male. Front wing 2.7 mm. Labels: a white label "♂ + 25 gl. Altenberg 28.5". A blue rimmed box label "retroligatus Frst.". Holotype labelled by me: *M. pumilio* det. van R.

*Megastylus leptoderus*. Male. Front wing 2.4 mm. Labels: a white label "♂.30 gl. Boppard 24.4". A blue rimmed box label "leptoderus Frst.". Holotype labelled by me: *M. pumilio* det. van R.

*Megastylus pauxillus*. Male. Front wing 2.4 mm. Labels: a white label "♂.29 gl. Aachen". A blue rimmed box label "pauxillus Frst.". Holotype labelled by me: *M. pumilio* det. van R.

Comment. — A number of very small specimens (♂ 2.7—3.2 mm; ♀ 2.5—3.2 mm) probably represent a third species, and one difficult to recognize. From the available names for this taxon I have chosen *M. pumilio* as the most suitable (both sexes described). I do not give full descriptions of both sexes but refer to the characters given in the keys. Setting aside the characters of the body or wing length which are not very reliable, the female is still rather clearly differentiated from the *M. cruentator* female by the stout middle femur (index 3.6—3.8) (5.1—7.0 in *M. cruentator*). The male, however, can only be separated from *M. cruentator* with unreliable characters, namely its size and either entirely brown or black thorax.

Apart from *M. pumilio*, Foerster described another three species, viz. *M. retroligatus*, *M. leptoderus* and *M. pauxillus*. Of each only one male is available. When studying these three holotypes I had to conclude that the character given by Foerster for separating these species, namely the position of the nervulus, is of no use. Besides, three different females have yet to be found in the field.

Material examined. — Germany: 2 ♂, lectotype of *M. pumilio* and 1 syntype, Aachen (coll. Foerster) (ZSM); 1 ♂ & 2 ♀, Boppard, 24 & 26.IV (coll. Foerster) (ZSM); ♂, holotype of *M. retroligatus*, Altenberg, 28.V (coll. Foerster) (ZSM); ♂, holotype of *M. leptoderus*, Boppard, 24.IV (coll. Foerster) (ZSM); ♂, holotype of *M. pauxillus*, Aachen (coll. Foerster) (ZSM); ♂, Aachen (coll. Foerster) (ZSM); ♂, Lousberg (bei Aachen), 3.X (coll. Foerster) (ZSM); 2 ♂, Altenberg, 28.V (coll. Foerster) (ZSM). Netherlands: ♀, Arkel, 20.VIII.1967 (CJZ); ♂, Asperen, 1.VII.1967 (CJZ).

### *Megastylus rufipleuris* (Foerster) new combination

♀ *Myriarthrus rufipleuris* Foerster, 1871, Verh. naturh. Ver Rheinl. 28 : 103.

Characteristics of the holotype. — *Myriarthrus rufipleuris*. Female. Front wing 3.0 mm. Labels: a white label "♀ 39 gl Aachen". A blue rimmed box label "rufipleuris Frst.". Holotype labelled by me: *M. rufipleuris* det. van R.

Description of the female. — Front wing 3.0—4.0 mm. Head black. Labial palpi short, maxillary palpi long; white to brownish. Clypeus strongly convex, yellow to brown, with sparse, erect hairs. Face, yellow to brownish, polished, with suberect, sparse hairs. Frons with weak antennal scrobes, polished. Inner orbits above antennal sockets with broad white lining, which at most reaches the lower ocellus. Antennae with about 39—40 short segments, strongly pilose.



Thorax with rather characteristic colouring; pleuron 1, entire pronotum, episternum 2 (mesopleurae), including sternal part, all coxae and legs light yellowish to light brown. Mesoscutum dark brown to black, except for streaks along prescutal sutures. Scutellum light brown. Entire propodeum black. Thorax with sparse, suberect hairs. Wings hyaline. Index of middle femur: 4.2—4.8 (4 specimens!), thus lying between *M. cruentator* and *M. pumilio*.

Gaster with 1st and 2nd tergite relatively roughly alutaceous, following tergites more polished. Apical segments in undamaged specimens with rather long widely spaced hairs. Gaster fuscous with 3rd tergite lighter.

Male. — Unknown.

Comment. — The available material of this species is very scanty, not more than four females. Nevertheless there is reason to believe that we are dealing with a separate taxon. The females have the second tergite alutaceous and are thus differentiated from *M. flavopictus*; they also have a conspicuous white lining on the upper inner orbit which does not occur in any of *pumilio* or *cruentator* specimens I have so far seen. I have some suspicion that *M. rufipleuris* females might be aberrant specimens of *M. flavopictus*, with the second tergite alutaceous; the absence of males might support this view, but especially in a group of species with so few true morphological characters. Males may be hidden between those of other species (*M. pumilio*).

Material examined. — Germany: ♀, holotype of *Myriarthrus rufipleuris*, Aachen (coll. Foerster) (ZSM). Netherlands: 2 ♀, Ede, Sijsselt, 28.IX.1970 and 12.V.1971 (CJZ); ♀, Giessenburg, 1.VIII.1968 (CJZ).

### Subgenus *Dicolus* Foerster, 1868

Type species: *D. insectator* Foerster, 1871 = *M. impressor* Schiødte, 1838.

Subgenus *Dicolus*: Thompson, 1888, Opusc. Ent. 12 : 1311.

### *Megastylus* (*Dicolus*) *inpressor* Schiødte

♀ *Megastylus impressor* Schiødte, 1838, Rev. Zool. Cuv. 1 : 139.

*Megastylus impressor*: Schiødte, 1839, Mag. Zool. 2(1) : 5—6.

♀ *Dicolus insectator* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 97. New synonymy.

*Dicolus insectator*: Townes, 1971, Mem. Amer. Ent. Inst. 17 : 205.

Characteristics of the type specimens. — *M. impressor*. Female. Front wing 5.0 mm. Labels: a white, double rimmed label "♀ 2.5. 1834 Strandm. Drewsen". Strandm. = Strandmøllen, a locality near Skousborg (Sielland)\*. The date in Schiødte's paper (1839!) is 21.V.1834\*. There is no doubt about the originality of the specimen. A second printed label: "Danmark ex coll. Schiødte". Holotype labelled by the present author.

*Dicolus insectator*. Female. Front wing 4.5 mm. Labels: a white label "♀. 33 gl. Aachen". A blue rimmed box label "insectator Frst.". Holotype labelled by me.

Female. — Postanellus slender and long, index about 7.0—10.0. Hind tibia slightly inflated in proximal part (Fig. 4). Hind femur somewhat inflated in proximal part. Front tarsus of normal shape, basitarsus about 0.33—0.43 of front tibia (Fig. 6). In fresh specimens head, except clypeus, black, polished. Pronotum with yellowish to

\*) Information from Dr. Børge Petersen.

reddish parts, mesoscutum black, polished. Mesopleurae and scutellum reddish brown. Propodeum black with conspicuous fossa in proximal part. Legs yellowish to reddish. Gaster with proximal tergites alutaceous. First and second tergite and apex brown to black, third and fourth (in part) tergite yellow to brown. Ovipositor, when not bent downwards, concealed, thus causing confusion with the male.

Male. — Males are difficult to recognize notwithstanding some important characters: the hind tibia is not inflated proximally and there is no constriction in the distal part as in males of *M. pectoralis* (compare Figures 7 and 8). The hind femur is long and slender, index 7.0—8.5 (some overlapping with *M. cruentator*). The postanellus is long and slender, index 8.8—12.5. The propodeum shows the conspicuous transverse impression in its 0.25—0.28 proximal part, typical for the subgenus *Dicolus*. The three specimens studied show a vividly brown coloration, with clypeus, latero-ventral parts, legs including coxae and spot on gaster, yellowish brown.

Material examined. — Denmark: ♀, holotype of *M. impressor*, Strandmøllen, 2.V.1834, leg. Drewsen (coll. Schiødte) (MC); ♀, Strandmøllen, leg. Drewsen (coll. Schiødte, not a type spec.) (MC); ♂, Viborg, leg. Schiødte (coll. Schiødte) (MC). Germany: ♀, holotype of *Dicolus insectator*, Aachen (coll. Foerster) (ZSM); ♀, Nd Spessart, Lochmühle, 17—22.X.1971, trap (coll. van Rossem). Netherlands: ♂, Planken Wambuis (near Ede), 5.IX.1964 (coll. van Rossem); ♀, Ede, 9.VI.1971, leg. Zwakhals (CJZ). No locality: ♀, Pt Ballon, 18.VIII.1961, 1100 m, leg. den Hoed (KWR); ♂, leg. Schmiedeknecht (coll. Smits van Burgst) (ELW).

### *Megastylus (Dicolus) pectoralis* Foerster

♂ ♀ *Dicolus pectoralis* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 97.

Characteristics of the type specimens. — *Dicolus pectoralis*. Female. Front wing 4.6 mm. Labels: a white label "♀. 33 gl. Lousb. (= Lousberg, the type locality) 25.10"; a white label (not original) "pectoralis 7 ♀\*)" in pencil; a label "Dicolus pectoralis Foerst. ♀ det. J. F. Aubert"; lectotype labelled by the present author. A second specimen, a male, undoubtedly a syntype, was labelled paralectotype.

Female. — The two characters of the subgenus *Dicolus* are well developed in *M. pectoralis* female: namely the slender postanellus, index about 8.0, and the deep transverse impression of the propodeum. Confusion with the subgenus *Megastylus* is out of the question. The conspicuously inflated hind tibia distinguishes this species from two other *Dicolus*, viz. *excubitor* and *impressor*, and Foerster quite rightly used this character (Fig. 3). An interesting feature which this female shares with *D. excubitor* and the doubtful *D. subtiliventris*, is the long regular pilosity of the antenna, not found in the other *Megastylus* species discussed in this paper.

Male. — The only two available males were in Foerster's set. These two show, somewhat weakened, the characteristic shape of the hind tibia of the female. (Compare Fig. 7). I think these males are *M. pectoralis*. The two specimens both have the face entirely ivory-yellow with the inner orbit above the antennal sockets marked yellow, as in the female. The extremely slender front and middle femora, indices between 7.4—10.0, are very conspicuous which makes differentiation from *Megastylus* s.str. males easy. The deep transverse propodeal impression of *Dicolus* is also present.

\*) Probably not all female specimens are syntypes.

Biology. — Considering that nothing is known about the biology of this species it is perhaps worth noting that C. J. Zwakhals caught 4 females in his Malaise - Townes trap on 1 November 1970 on the northern slope of a diluvial hill covered with mixed wood (*Fagus*, *Quercus*, *Pinus* and some other components), about 75—100 years old. Microclimate of the site was cool and rather moist. Townes (1971) notes for the Microleptinae "moist habitats, such as cloud forests".

Material examined. — Germany: ♀, lectotype of *Dicolus pectoralis*, Lousberg (bei Aachen), 25.X. (coll. Foerster) (ZSM); ♂, paralectotype of *Dicolus pectoralis*, Lousberg (bei Aachen), 25.X. (coll. Foerster) (ZSM); 5 ♀, Lousberg (Aachen), respect. 2 ♀, 16.VII.; 3.X.; 15.X.; 25.X. (coll. Foerster) (ZSM); ♂ ♀, Aachen (coll. Foerster) (ZSM). Netherlands: 4 ♀, Ede, Sijsse, 1.XI.1970, trap, leg. Zwakhals (CJZ).

### *Megastylus (Dicolus) subtiliventris* Foerster

♀ *Dicolus subtiliventris* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 97.

Characteristics of the type specimen. — *Dicolus subtiliventris*. Female. Front wing 3.1 mm. Labels: a white label "♀, 31 gl. Lousb. (Lousberg bei Aachen, the type locality) 25.10". A blue rimmed box label "subtiliventris Frst.". Holotype labelled by the present author.

Comment. — The treatment of this species must be tentative because material available is limited, namely the holotype and only one corresponding specimen. The holotype and the second specimen do not differ essentially from *M. pectoralis*. There are only two points of difference, namely the smaller size and the absence of a broad yellow spot on the frontal orbit dorso-lateral of the antennal sockets (present in *M. pectoralis*), though these characters are unhelpful in distinguishing it. I have at present treated *M. subtiliventris* as a separate taxon, since a number of specimens of *M. pectoralis* from two quite different localities all have the yellow spot, while both specimens of *M. subtiliventris* also from two separate localities, do not. Finally it should be noted that part of Foerster's material of *M. pectoralis* and the holotype of *M. subtiliventris* were collected in the same place on the same date!

Male. — Unknown.

Material examined. — Germany: ♀, holotype of *Dicolus subtiliventris*, Lousberg (bei Aachen) 25.X. (coll. Foerster) (ZSM); ♀, Nd Spessart, Lochmühle, 17-22.X.1971, trap (coll. van Rossem).

### *Megastylus (Dicolus) excubitor* Foerster

♀ *Dicolus excubitor* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 97.

Characteristics of the type specimen. — *Dicolus excubitor*. Female. Front wing 4.8 mm. Labels: a white label "♀, 33 gl. Aachen". A blue rimmed label "excubitor Frst.". Holotype labelled by the present author.

Comment. — Of this taxon only the holotype was available. This specimen shows relationships towards *M. pectoralis*, having the long pilose antenna and the slender front basitarsus (about half as long as front tibia\*) (Fig. 5), but at the same time the

\*) Basitarsus about 0.57—0.59 of tibia in *subtiliventris*, 0.57 in *pectoralis* lectotype, 0.33 in *impresor* lectotype.

differential character of the latter species is lacking, namely the inflated hind tibia. Though the shape of the hind tibia has much in common with that of *M. pectoralis* and some vague inflation could be suspected, the difference does not quite justify a synonymy of *M. excubitor* with *M. pectoralis*. The solution of this question has to wait for further material and for the present we shall have to accept Foerster's differential character in the hind tibia.

Male. — Unknown.

Material examined. — Germany: ♀, holotype of *Dicolus excubitor*, Aachen (coll. Foerster) (ZSM).

#### TYPE NOT IDENTIFIED

♂ *Megastylus facialis* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 105.

Characteristics of the type specimen. — *M. facialis*. Male. Front wing 2.9 mm. Face, including clypeus and oral parts ivory. Thorax entirely brown, except for a narrow ivory-yellow rim on anterior margin of pronotum. All coxae and further parts of legs light yellowish to brown, except for fuscous distal part of hind tibia. Index of postanellus, 6.0. Index of hind femur, 5.3. Labels: a white label "♂, 23 gl. Boppard 24.4"; a blue rimmed box label "facialis Frst.". Holotype labelled by the present author.

I have not succeeded in recognizing this holotype at the species level; certainly there seems no reason to regard it as a separate taxon. The specimen has much in common with *M. pumilio* although the true *M. pumilio* has a brown face. Definite identification has to wait for further information with regard to e.g. *M. rufipleuris* and *M. pumilio*.

#### SPECIES INQUIRENDAE

♀ *Megastylus orbitator* Schiødte, 1838, Rev. Zool. Cuv. 1 : 139 (type lost).

♂ *Myriarthrus aemulus* Foerster, 1871, Verh. naturh. Ver. Rheinl. 28 : 103. The orbita frontalis has a white lining in the type specimen. Foerster wrote: "Orbita frontalis nicht weiss." The specimen belongs to *Megastylus flavipictus* Gravenhorst.

I have not seen the type of the following species:

*Miomeroïdes transsylvanicus* Kiss, 1924, Verh. Mitt. Siebenbürg. Ver. Naturw., Hermannstadt 72—74 : 113. According to Townes (1971), a species of *Megastylus*.

*Megastylus (Dicolus) hirticornis* Strobl, 1903, Mitt. Nat. Ver. Steierm. 40 : 141. Strobl writes: "Steht etwa neben *subtiliventris* Frst., Thms., ist aber fast dreimal grösser und auch durch die Färbung ausgezeichnet". In all probability this is a specimen of *M. pectoralis*.

*Megastylus pleuralis* Thomson, 1888, Opusc. Ent. 12 : 1313. Probably a specimen of *M. cruentator*.

#### ACKNOWLEDGEMENTS

For the loan of type material and specimens I am grateful to: B. Petersen, Universitetets Zoologiske Museum, Copenhagen (MC); W. J. Pulawski, Muzeum Zoologiczne, Wrocław (ZI); E. Diller, Zoologische Sammlung des Bayerischen Staates, München (ZSM); K. W. R. Zwart, Laboratorium voor Entomologie, Wageningen (ELW); C. J. Zwakhals, Arkel (CJZ) and K. W. R. Zwart (KWR) (the former G. J. den Hoed coll.). I am also indebted to Forschungsinstitut Senckenberg, Frankfurt a/M for kind hospitality in recent years and for giving me opportunity to do collecting work in the northern Spessart at their Aussenstelle Lochmühle bei Bieber (Pl. 1 Fig. 1). It was there that I collected some Microleptinae which arose my first interest in this subfamily.



## REFERENCES

- Foerster, A., 1868. — Synopsis der Familien und Gattungen der Ichneumoniden. — Verh. naturh. Ver. preuss. Rheinl. 25: 135—221.
- , 1871. — Uebersicht der Gattungen und Arten der Familie der Plectiscoiden. — Verh. naturh. Ver. preuss. Rheinl. 28: 71—123.
- Gravenhorst, J. L. C., 1829. — Ichneumonologia Europae 2 (2): 978—989 (Plectiscus). Vratistaviae.
- Haliday, A. H., in Curtis, 1837. — A guide to an arrangement of British Insects 2 (2 ed.).
- Kiss, von Zilah, A., 1922-1924. — Beiträge zur Kenntnis der ungarischen und siebenbürgischen Ichneumoniden (Schlupfwespen) Fauna. — Verh. Mitt. Siebenbürg. Ver. Naturw. Hermannstadt 72—74: 32—146.
- Perkins, J. F., 1962. — On the type species of Foerster's genera (Hym. Ichneum). — Bull. Br. Mus. nat. Hist., Entomology 2 (8): 383—483.
- Schiødte, J. C., 1838. — Ichneumonidarum, ad faunam Daniae pertinentium, genera et species novae. — Rev. Zool., Soc. Cuvierienne 1: 139.
- , 1839. — Ichneumonidarum, ad Faunam Daniae pertinentium genera et species novae, descripsit. — Mag. Zool. D'anat. Comp. et de Pal. II: 1—..., Pl. 6—10.
- Schmiedeknecht, O., 1911. — Opuscula Ichneumonologica. Plectiscina. 28 & 29: 2161—2271.
- Strobl, P. G., 1903. — Ichneumoniden Steiermarks. — Mitt. Nat. Ver. f. Steierm. 40: 43—160.
- Thomson, C. G., 1888. — Försök till gruppering af slägtet Plectiscus (Grav.). — Opuscula entomologica 12: 1266—1318.
- Townes, H., 1971. — The genera of Ichneumonidae, part 4. — Mem. Amer. Ent. Inst. 17: 1—372, Pl. 1—217. Ann Arbor.
- Viereck, H. L., 1914. — Type species of the genera of Ichneumon flies. — U.S. Nat. Mus. Bull. 83: 1—186.